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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

INGHAM, JOHN C

ART UNIT	PAPER NUMBER
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2814

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/584,039	Applicant(s) GELINCK ET AL.	
	Examiner JOHN C. INGHAM	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendments to the drawings have been entered and the objections withdrawn. The amendments to the claims have been entered and the objections to claims 7 and 16 have been withdrawn. The 112 rejection of claim 10 is withdrawn.
2. New claim 18 appears to have a typo in the word "least".

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
5. Claims **1-5, 7, 9-12 and 15-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Redecker (US 2003/0127676) and Geens (US 6,815,711).

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6. Regarding claims **1 and 17**, Redecker discloses in Fig 1 a non-volatile memory device and a method for processing comprising an organic semiconductor layer (2) and an organic ferroelectric layer (5), said organic semiconductor layer and said organic ferroelectric layer being at least partially in contact with each other.

7. Redecker does not specify wherein the organic semiconductor layer is ambipolar. Geens teaches that an organic semiconductor layer should be ambipolar so as to combine high balanced mobility and low-cost (col 2 ln 44-46). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the teachings of Geens so as to combine high balanced mobility and low-cost.

8. Regarding claims **2 and 3**, Redecker discloses in Fig 1 the device of claim 1, furthermore comprising a control electrode (6) being formed in a first conductive layer, the control layer being separated from said organic ambipolar semiconductor layer (2) by said organic ferroelectric layer (5).

9. Regarding claim **4**, Redecker discloses in Fig 1 the device of claim 2, further comprising a first main electrode (3) and a second main electrodes (4) being formed in a second conductive layer, said first and said second main electrode being separated from each other by material of the organic ambipolar semiconductor layer (2), and said first and second main electrode being separated from said control electrode by said organic ferroelectric layer (5).

10. Regarding claim **5**, Redecker discloses in Fig 5 the device of claim 2, wherein the first conductive layer is a conductive polymer layer (¶34).

11. Regarding claim **7**, Redecker discloses in Fig 1 the device of claim 4 (see objections) wherein the second conductive layer is a conductive polymer layer (§29).
12. Regarding claims **9 and 10**, Redecker discloses in Fig 1 the device of claim 1, wherein the organic ferroelectric layer is a ferroelectric polymer (§32) comprising material selected from $(CH_2-CF_2)_n$ (Fig 1 item 5 is pVDF).
13. Regarding claims **11 and 12**, Geens teaches the device of claim 1, wherein the organic ambipolar semiconductor layer comprises a mixture of n-type and p-type material (organic ambipolar layer is PCBM and OC1C10-PPV, see col 2 ln 63-67).
14. With regards to claims **15 and 16**, Redecker and Geens disclose the device of claim 1, including an organic ambipolar layer mixture. In reference to the claim language pertaining to the effect of the device (a memory window depending on the ratio of current, whereby said ratio is close to 0 or close to 1), the claiming of a new use, new function, or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. (In re Best, 195 USPQ 430, 433 (CCPA 1977) and In re Swinehart, 439 F. 2d 210, 169 USPQ 226 (CCPA 1971); please see MPEP § 2112). Since Redecker and Geens show all the features of the claimed invention, the memory window and current ratios are an inherent property of the invention.
15. Claims **6 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Redecker and Geens as applied to claims 5 and 7 above, and further in view of Gudesen (US 2005/0151176).
16. Redecker and Geens do not specify wherein the conductive polymer layer is a PEDOT/PSS layer or a PANI layer.

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17. Gudesen teaches that conducting polymers suitable for electrodes may be PANI (¶33). One of ordinary skill in the art would have been motivated to look to analogous art teaching alternative suitable materials for conductive polymers, art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

18. Claims **13 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Redecker and Geens as applied to claim 1 above, and further in view of Sirringhaus (US 6,905,906).

19. Redecker and Geens do not specify wherein the organic ambipolar semiconductor layer is a single organic material of poly(3,9-di-tert-butylindeno[1,2-b]fluorene).

20. Sirringhaus teaches that organic layers suitable for semiconductor layers may be polyfluorene (col 8 ln 35-40). One of ordinary skill in the art would have been motivated to look to analogous art teaching alternative suitable materials for organic semiconductors, art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

Allowable Subject Matter

21. Claims **18 and 19** are allowed.

22. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or make obvious the device of claim 18, including

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wherein an organic ambipolar semiconductor layer is in contact with three sides of said first and second electrodes, and an organic ferroelectric layer is in contact with one side of each said first and second electrodes, and at *least* two sides of said control electrode.

Response to Arguments

23. Applicant's arguments filed 8 April 2009 have been fully considered but they are not persuasive. Regarding the argument on page 13 that Geens does not teach or suggest using organic ambipolar semiconductor and ferroelectric layers in contact with each other to form a nonvolatile memory device: Redecker discloses an organic semiconductor and ferroelectric layer in contact with each other to form a memory device comprising a thin film transistor. Geens teaches the benefits of using an ambipolar organic semiconductor material as the channel layer in a thin film transistor. Therefore one of ordinary skill in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination yielding no more than predictable results.

Conclusion

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN C. INGHAM whose telephone number is (571)272-8793. The examiner can normally be reached on M-F, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wael M Fahmy/
Supervisory Patent Examiner, Art Unit 2814

John C Ingham
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